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THE EVOLUTIONS OF THE GALILEO RETURN LINK SERVICE

Abstract

The Cospas-Sarsat System is a satellite-based Search and Rescue international initiative, initially setup by Canada, France, Russia and USA. It provides a free of charge service available to maritime, aviation and pedestrian users (such as backcountry hikers), allowing the relay of alert messages from mobile beacons worldwide on a non-discriminatory basis. Galileo support to the Search and Rescue service, herein SAR/Galileo, represents Europe's contribution to the Cospas-Sarsat system and plays a key role in the Medium Earth Orbit Search and Rescue System, MEOSAR. In addition to the Forward Link Alert Service (from beacon in distress to rescue coordination centers) the SAR/Galileo Service will also introduce a new Search and Rescue function, called the Return Link Service (RLS), which provides acknowledgment messages to distress beacons equipped with a Galileo receiver, through the Galileo L1 signal. Galileo is currently the first GNSS system to provide this service worldwide. The Return Link Service can be seen as an enabler and opens up a wide range of possibilities for future services. While today it is limited to automatic acknowledgement from the Cospas-Sarsat mission control centers via the Galileo system to the beacon, it can be used to provide a multitude of different functionalities. The European Union is already working on the evolutions of the service to enable exploitation of such functionalities. A non-exhaustive list of new functionalities includes: - RLS messaging: This entails the possibility to send acknowledgements and other more elaborate to the beacon in distress from a Rescue Coordination Centre. - Remote activation of a beacon from the ground. This functionality is studied in the context of civil aviation (e.g. in case of aircraft disappearance) but could also be applicable to maritime (EPIRB) or leisure (PLB) applications. - Remote deactivation of a beacon upon SAR mission completion, where it was not possible to turn off the beacon manually. - Through the RLS it is possible to easily cluster beacons (group of hikers, fleet of boats) with different possibilities like distress position exchange, geo-fencing. . . - The Return Link channel could also be envisaged in the frame of Search and Rescue operations for two-way exchange of short messages (pre-coded or free text) between Rescue teams and people in distress. This paper presents the evolutions of the Galileo Return Link Service, which are opening up new markets and potential applications, taking benefit from the quasi real-time service with 24/7 service availability and global coverage.